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# The Timber Industries of West Virginia

by James T. Bones  
and Ralph P. Glover, Jr.



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### **COVER PHOTO**

West Virginia still has an abundance of relatively small sawmills which manufacture rough wood products for local use. Mr. Ordin S. Roby, sawyer at this mill near Morgantown, West Virginia, has been sawing logs for about a half century. He was producing headers and other mine timbers for a nearby coal mine and rustic fencing.

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# The Timber Industries of West Virginia

## Contents

Highlights .....	1
Background .....	2
Current Industry Trends .....	2
Industry Overview .....	3
Lumber and Sawlogs .....	3
Pulpwood .....	5
Other Timber Products .....	6
Veneer logs and bolts .....	6
Cooperage .....	6
Rustic fencing .....	7
Manufacturing Residues .....	7
Literature Cited .....	8
Index of Tables .....	8



## HIGHLIGHTS

THE 1974 TIMBER-INDUSTRY survey in West Virginia showed that since 1965:

★ Total roundwood output of industrial products has declined by 19 percent to 106.6 million cubic feet.

★ Sawlog production has declined by 14 percent to 464 million board feet.

★ Pulpwood production has declined by 33 percent to 214 thousand cords.

★ Veneer-log production has declined by 38 percent to 3.2 million board feet.

★ Cooperage log and bolt production has declined by 35 percent to 3.2 million board feet.

★ The number of sawmills has declined from 505 to 365.

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*Round timber conversions for major products:*

*Softwood logs:* M bf (Int. 1/4-inch) =  $167.1 \text{ ft}^3 = 4.73 \text{ M}^3$

*Hardwood logs:* M bf (Int. 1/4-inch) =  $155.4 \text{ ft}^3 = 4.40 \text{ M}^3$

*Pulpwood:* 1 Std. cord =  $85 \text{ ft}^3 = 2.41 \text{ M}^3$

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## BACKGROUND

The Forest Service of the U.S. Department of Agriculture conducts continuing forest surveys of all states to provide up-to-date information about the timber and other related resources of the Nation. In the 14-state region served by the Northeastern Forest Experiment Station, all states have now been surveyed at least twice. West Virginia has now been inventoried for the third time. A part of the current survey included a timber-industry survey to determine the output of timber products, and the volume and disposition of primary manufacturing residues.

This report is the result of a 100-percent canvass of all primary wood manufacturers that were operating in West Virginia in 1974. Pulpwood production data were gathered as part of the Station's annual survey of pulpwood producers in the Northeast. The primary wood manufacturers first received a questionnaire that was mailed from the Experiment Station headquarters. If a mill owner failed to respond after three mailings, he was contacted in person by a member of the West Virginia Department of Natural Resources (DNR). The authors thank West Virginia's primary manufacturers for their excellent cooperation, and the DNR personnel who assisted in contacting non-respondents.

This report deals mostly with statistics for 1974, the calendar year of the current timber industry survey, and 1965, the calendar year of the previous complete survey. The reader is reminded that these years may or may not be representative for the various timber industries in West Virginia that are covered in this report. When documented production statistics were available for individual timber products for previous or intervening years, they were included for comparisons.

*Long-term production trends will only be forthcoming from repeated surveys in the future. Until a data base is built up over time, the reader is cautioned to use the current statistics prudently.*

## CURRENT INDUSTRY TRENDS

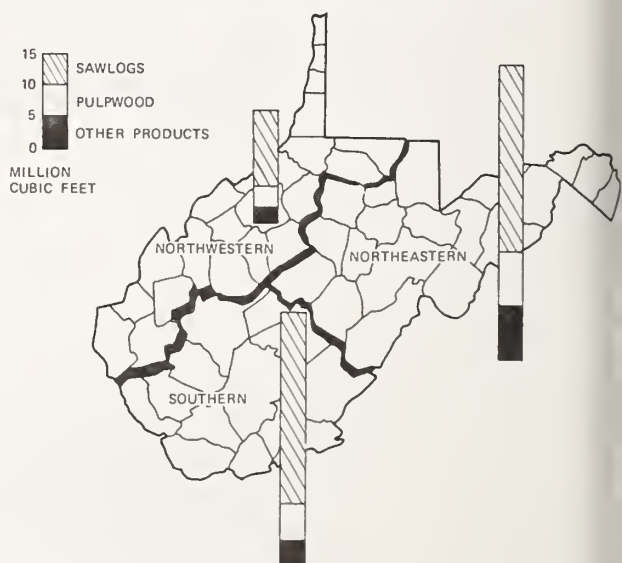
The key to improving timber utilization in West Virginia is recovering a greater volume of wood from each forested acre. When harvesting solid wood products, more topwood, small-

diameter tree boles, and sound sections of defective trees must be recovered and converted into industrial products. Currently in West Virginia there are five sawmill operators using scragg mills to handle this material. Other mill men have shown much interest in using these scragg mills.

New technology is being developed for harvesting fiber products. These total-tree harvesting systems are ideally suited for conversion of hardwood stands to even-age management without the unsightly appearance of logging residues, and for forest land-clearing projects. After felling, the entire tree (including branches and top) is yarded to a central location where it is fed into a chipper. The unbarked chips are blown into a van for shipment to the pulpmill. Forest researchers claim that this new system can increase the wood-fiber yield per acre by 25 to 60 percent over conventional pulpwood harvesting methods, depending upon the volume of cull and small-diameter trees in the stand. This increase in wood-fiber recovery makes it profitable to harvest many stands that were previously passed over as too costly to harvest by conventional methods.

Public pressure, more stringent pollution-abatement regulations, and threats of strict harvesting regulations are stimulating research in specialized timber-harvesting equipment. The

Figure 1.—Harvest of industrial wood in West Virginia by regions and major products, 1974.





skyline logging system recently returned to West Virginia for trial use on large forest tracts. This system is considered prohibitively expensive for harvesting small tracts, or for use in areas that require frequent shifts in equipment. If small, more efficient prototypes can be developed, they may be used more extensively in West Virginia. The advantages of this system are that there is less physical disturbance to the logged-over area, and a smaller area is required for access logging roads.

In anticipation of the revitalizing and upgrading of the eastern rail systems, and increasing demand for pressure-treated mine materials, the number of treating plants in West Virginia has nearly tripled in the last decade; treating capacity has doubled. Many of the new plants have been small, single-unit installations.

## INDUSTRY OVERVIEW

Forest industries used nearly 107 million cubic feet of roundwood from the timberlands of West Virginia in 1974. Hardwood species accounted for more than 89 percent of this volume. Sawlogs were the major roundwood product, accounting for two-thirds of the total harvest in West Virginia. Pulpwood production ranked second in volume—even though there are no wood-pulp mills operating in the State. Other products that made up a minor portion of the harvest were cooperage and veneer logs, mine timbers, posts, poles, handle stock, and fence rails.

The total industrial roundwood harvest in West Virginia decreased by 19 percent since the last industry survey was made in 1965 (*Kingsley 1968*). While the sawlog harvest declined by only 14 percent, pulpwood, mine timber, and cooperage and veneer log output each dropped more than 30 percent. The softwood harvest declined by 12 percent, while the hardwood harvest declined by 20 percent.

In 1974, more of the industrial roundwood harvest came from West Virginia's North-eastern Region than from the other two regions (fig. 1). The 47 million cubic-foot harvest represented 44 percent of the total. Though the Southern Region ranked second in total roundwood volume harvested—42 million cubic feet—a greater volume of sawlogs was harvested in this region than any other region.

Nicholas, Fayette, and Greenbrier Counties each accounted for more than 25 million board feet of sawlogs in 1974.

## LUMBER AND SAWLOGS

West Virginia has been an important hardwood lumber-producing state for a century. When the lumber industry was becoming established in West Virginia after the Civil War, softwood lumber production exceeded that of hardwoods. But by 1879, hardwood lumber accounted for 113 million board feet of the 180 million board feet that was produced. Since then, hardwood lumber manufacture has dominated the industry.

In 1907, more than a billion board feet of lumber was being sawed annually in West Virginia, 64 percent from hardwoods (fig. 2). By 1910, West Virginia produced more hardwood lumber than any other state. Total lumber production remained over the billion-board-foot level in West Virginia until 1917, when production dropped to 810 million board feet. This downward trend continued until the Depression; in 1933 total production dropped to 185 million board feet, the lowest since 1880. During World War II, production climbed; 578 million board feet was produced in 1941. Since then, lumber production has averaged about 425 million

**Figure 2.—Lumber production in West Virginia, 1889-1974.**  
Sources: Steer, Henry. 1948. *Lumber production in the United States, 1799-1946*. U.S. Dep. Agric. Misc. Pub. 669. 233 p.; *Lumber production statistics*. U.S. Dep. Commer., Wash., D.C.



board feet per year. In 1974, 381 million board feet of lumber was produced, 95 percent from hardwoods.

The number of sawmills operating in West Virginia has closely paralleled fluctuations in lumber production. As lumber demand slackened and production dropped, fewer sawmills operated. During the first decade of this century, when historic production levels were being reached, the number of sawmills operating in West Virginia exceeded 1,500. Many small producers responded again to the increased demand during World War II; in 1942, 1,558 sawmills were known to have operated. Since that time the number of operating mills has declined. From 1965 to 1974, the number of sawmills in West Virginia decreased from 505 to 365.

Hansen and Warder (1967) observed that a pattern toward greater stability had developed within the industry. This was exemplified by a steady decline in small-scale operations, an increase in average size, a leveling-off in total output, and an increasing number of mills that operated all year. The study also found that the percentage of sawmills near improved roads had grown from 68 percent in 1958 to 81 percent in 1967, and that maximum distances for hauling sawlogs (from the woods to the mill) had increased from a range of 10 to 36 miles to a range of 18 to 110 miles. In the eastern United States, improved transportation routes tend to increase the size of raw-material procurement areas, increase product marketing capabilities, and encourage the development of high-capacity production facilities.

While sawlog production from West Virginia timberlands decreased by 5 percent—464 million board feet—from 1965 to 1974, log receipts at sawmills decreased by 8 percent (table 5). Only the Northwestern Region reflected increases in both sawlog production and receipts, up 26 percent and 17 percent, respectively, during the past 10 years. The Southern Region experienced the greatest losses in both production and receipts.

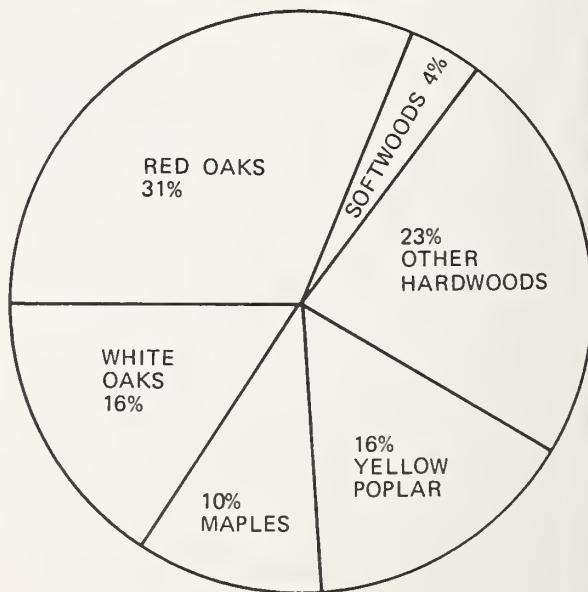
In 1974, the Southern and Northwestern regions were net exporters of sawlogs, while the Northeastern Region was a net importer. Over 7 million board feet of sawlogs were shipped from the Southern Region to other regions within West Virginia and nearly 6 million board feet of sawlogs were shipped to other states. Only 2 million board feet of sawlogs were imported

from other regions and states. In the Northwestern Region of West Virginia, more than 26 percent of the harvested sawlog volume was shipped to other regions or states for manufacture. Only 11 percent of the logs sawed in the region came from other regions or states. In the Northeastern Region, only 14 million board feet of the 186 million produced in 1974 was exported to other regions and states. More than 22 million board feet of sawlogs, however, were imported to supplement local sawmill requirements.

Statewide, West Virginia was a net exporter of sawlogs in 1974. Nearly 28 million board feet of sawlogs were shipped to neighboring states for manufacture. Pennsylvania and Virginia were major recipients of West Virginia sawlogs, receiving 11 million and 9 million board feet, respectively. More than 11 million board feet of sawlogs were imported by West Virginia mills. Maryland was the major out-of-state sawlog source, supplying more than 6 million board feet in 1974.

Oak accounted for nearly half of the total sawlog production in 1974; red oaks alone accounted for 31 percent of the total (fig. 3). Other important hardwood species included white oaks, maple, and yellow-poplar. Softwood species accounted for only 4 percent of the total harvest.

Figure 3.—West Virginia sawlog production, by species in 1974, in percent.



Yellow pine and hemlock were the most important softwoods harvested.

## PULPWOOD

Though at least six pulpmills have operated in West Virginia over the years, none are presently in operation. The first known pulpmill was established in 1886 at Harpers Ferry. A second pulpmill, constructed at West Piedmont, was determined to be in the State of Maryland after a boundary dispute between the two States. Other pulpmills were constructed at Davis in 1895, at Parsons in 1902, and at Richwood. The Richwood mill, the last operating mill, closed in the early 1930s. The Depression and competition from newer pulpmills were major reasons for the mill closure. No pulpmills have been established in West Virginia since the Depression; no doubt, the proximity of pulping facilities in Maryland, Virginia, Ohio, and Pennsylvania have worked against the development of a local industry. However it is reasonable to assume that the woodpulp industry will move into West Virginia as demand for paper products continues to climb in the eastern United States. The State has sufficient timber resources to support a pulpmill.

Nearly 214,000 cords of pulpwood were harvested from West Virginia timberlands in 1974, and more than 198,000 cord equivalents of pulp chips were recovered from the primary wood manufacturing plants in the State.

Though the volume of wood from plant residues is at a record high, the total roundwood harvest has decreased during the last decade. Since 1965, the roundwood harvest from softwoods has declined by 50 percent and the harvest from hardwoods has declined by 25 percent. During the same period, chip production from plant residues has climbed 115 percent from more 92 thousand cord equivalents in 1965 to 198 thousand cord equivalents.

In 1974, softwood trees accounted for 12 percent of the production total, hardwood trees accounted for 40 percent (fig. 4). Pulp chips from manufacturing residues accounted for the remaining 48 percent. Most of the softwood harvest was pine. Most of the hardwood harvest—45 percent of the roundwood total—was oak and hickory. Yellow-poplar made up 13 percent of the total.

Nearly 762,000 cords of softwood roundwood and 1.9 million cords of hardwood roundwood were harvested for pulpwood from West Virginia timberlands in the past decade. More than 63 percent of the softwood and 66 percent of the hardwood came from the Northeastern Region of West Virginia. The Northeastern Region, however, decreased in importance as a pulpwood producing region from 1965 to 1974. In 1965, two-thirds of the total harvest came from the Northeastern Region; in 1974, the region accounted for less than half of the pulpwood harvest.

Figure 4.—West Virginia pulpwood production in 1974, in percent.





## OTHER TIMBER PRODUCTS

### Veneer Logs and Bolts

Nearly 3.2 million board feet of veneer logs were harvested in West Virginia in 1974. This volume represents a 38-percent decrease in production since 1965, when 4.6 million board feet of logs were harvested. Though West Virginia has four veneer mills, a high percentage of the State's veneer-log harvest is exported to other states for manufacture. West Virginia veneer manufacturers are also large importers of wood from other states. This is because the species of quality veneer logs that are harvested in West Virginia are not always compatible with the needs of local secondary manufacturers. For example, West Virginia veneer manufacturers have purchased hard maple and yellow birch from Vermont, white ash and black cherry from Pennsylvania, and yellow-poplar and gum from Maryland. At the same time, West Virginia timber harvesters have shipped black walnut to Ohio and hickory to Tennessee for manufacture. In 1974, 2.6 million board feet of veneer logs were exported from West Virginia and 3.7 million board feet were imported. Wood receipts of West Virginia's four veneer mills totaled 4.3 million board feet in 1974.

Comparisons for selected years can be made with the following statistics:

<i>Year</i>	<i>Operating plants (number)</i>	<i>Production (million board feet)<sup>a</sup></i>	<i>Receipts</i>
1963	5	7.0	6.3
1965	6	4.6	6.4
1968	6	7.9	8.7
1972	4	4.3	6.1

<sup>a</sup> International 1/4-inch rule.

Production and receipts of veneer logs in West Virginia peaked in 1968. Since then, plant closures have adversely affected both production and receipts.

Changing preferences of consumers and the availability of suitable high-quality logs have affected the species distribution of the veneer-log harvest over the years. Important veneer species harvested from West Virginia timberlands during the last decade indicate past trends:

<i>Year</i>	<i>Species</i>	<i>Harvest (million bd. ft.)<sup>a</sup></i>	<i>Portion of total harvest (percent)</i>
1963	Yellow-poplar	4.8	69
	Red oak	0.7	10
	Black walnut	0.7	9
1974	Yellow-poplar	1.1	35
	Hickory (pecan)	0.9	28
	Red oak	0.6	20

<sup>a</sup> International 1/4-inch rule

Yellow-poplar was the dominant species harvested in 1963, accounting for 69 percent of the total harvest. By 1974, though yellow-poplar was still the volume leader, the percentage of harvested hickory and red oak had increased, and black walnut had declined in importance.

### Cooperage

Tight cooperage for bourbon barrels has been an important use of white oak in West Virginia for many years. Large, high-quality white oak sawtimber is needed to produce the clear defect-free staves that are required.

In 1953, there were five stave mills operating in West Virginia. In 1974, five mills were again in operation.

The following cooperage log-and bolt-production statistics show the volume of white oak harvested in West Virginia for staves in recent years:

<i>Year</i>	<i>Production (million board feet)</i>
1949	6.7
1952	3.2
1960	1.5
1965	4.4
1974	3.2

In the past, many of the cooperage mills in West Virginia were portable and were shifted from county to county to take advantage of local markets and the high-quality timber that was available. As extensive stands of quality white oak were more difficult to find, the number of mills diminished and those that operated became stationary. Some were integrated with sawmill operations. The raw material for these

operations was delivered in either bolt or log form. The logs were sawed into heading material or cut into 38-inch lengths and split into stave bolts. The standard measure for these bolts is bolt-feet—the chord distance across the end of the bolt from sapwood to sapwood. One bolt-foot is equivalent to about 10 to 12 board feet.

### Rustic Fencing

West Virginia's rustic fencing industry produces two- and three-rail fences that are used by home and estate owners, principally in the suburban areas of the Atlantic Seaboard states. A decade ago, fencing mills were characterized as requiring little manufacturing equipment and considerable hand labor. The preferred species was American chestnut, which had been killed when the chestnut blight swept through the eastern United States.

As indicated by the following statistics, total production has risen in West Virginia:

Year	Softwoods		Hardwoods	
	Posts	Rails	Posts	Rails
	(thousand pieces)		(thousand pieces)	
1965	8	—	238	477
1974	89	912	582	577

Today, most fencing producers in West Virginia have high-production mill facilities and use black locust and sassafras for posts, and spruce and sassafras for rails.

Many of the posts used for rustic fencing, however, are still cut by farmers and other rural residents during slack periods, and many rails are produced by sawmills that also produce rough lumber and shoring timber for mines.

## MANUFACTURING RESIDUES

Woodpulp mills, charcoal producers, and other industries that depend upon inexpensive sources of wood are becoming increasingly dependent on primary manufacturing residues as a major source of raw material. More stringent air and water pollution laws are also making open burning and dumping of residue unacceptable and encouraging manufacturers to seek uses for residues.

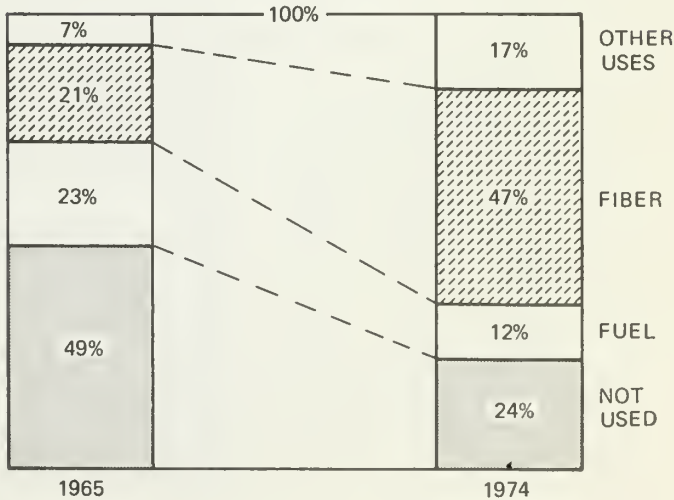
Nearly 45 million cubic feet of residues were

generated by primary wood manufacturers in West Virginia in 1974. Thirty-six million cubic feet of this total was woody material and 9 million cubic feet was bark. About 22 million cubic feet of the woody residue was suitable for conversion into chips for fiber products. Seventy-four percent of all residues—33 million cubic feet—was recovered and used. Only 65 percent of the bark residue was used, but 76 percent of the wood residue was used.

When the results of the 1974 study in West Virginia were compared to a similar study (*Kingsley 1968*) made in 1965, some important trends were identified (fig. 5).

- The volume of manufacturing residues used in 1974 was 25 percent greater than the volume used in 1965.
- The volume of manufacturing residues used for fiber-product chips in 1974 was 26 percent greater than that in 1965.
- The volume of manufacturing residues used for fuel—both industrial and domestic—in 1974 was 11 percent greater than that used in 1965.
- The volume of manufacturing residues used for such products as metallurgical chips and charcoal in 1974 was 10 percent greater than that used in 1965.

Figure 5.—Trends in manufacturing residue use in West Virginia, 1965 and 1974.



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## INDEX OF TABLES

### INDUSTRIAL ROUNDWOOD

#### *Table No.*

- 1 Volume of industrial roundwood by products harvested in West Virginia in 1974.
- 2 Timber products output from roundwood by products, West Virginia, 1965 and 1974.
- 3 Industrial roundwood harvest in West Virginia by geographic regions, species groups, and products, 1974.

### SAWLOG STATISTICS

- 4 Number of sawmills in West Virginia by geographic regions and annual production classes, 1965 and 1974.
- 5 Sawlog production and receipts relationships in West Virginia by species groups and geographic regions between 1965 and 1974.
- 6 Sawlog production and receipts in West Virginia, by species and destination of shipments, 1974.
- 7 Sawlog production and receipts in the NORTH-EASTERN REGION of West Virginia, by species and destination of shipments, 1974.
- 8 Sawlog production and receipts in the SOUTHERN REGION of West Virginia, by species and destination of shipments, 1974.
- 9 Sawlog production and receipts in the NORTH-WESTERN REGION of West Virginia, by species and destination of shipments, 1974.



## OTHER PRODUCT STATISTICS

- 10 Pulpwood production in West Virginia by species groups, 1963-1974.
- 11 Output of pulpwood from roundwood in West Virginia by species groups and geographic regions, 1965-1974.
- 12 Veneer log production in West Virginia, by species and consuming state, 1974.
- 13 Veneer log production, receipts, and interstate shipments in West Virginia for selected years.
- 14 Production and disposition of manufacturing residues, by type of uses and industry source, West Virginia, 1974.

**Table 1.—Volume of industrial roundwood by products harvested in West Virginia in 1974**

Product	Standard unit	Volume in standard units			Roundwood volume		
		All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Thousand cubic feet							
Sawlogs	M board feet <sup>a</sup>	463,697	17,276	446,421	72,242	2,887	69,355
Pulpwood	Standard cords	213,600	50,800	162,800	18,156	4,318	13,838
Veneer logs	M board feet <sup>a</sup>	3,163	—	3,163	491	—	491
Cooperage logs	M board feet <sup>a</sup>	3,167	—	3,167	492	—	492
Mine timbers	M cubic feet	6,742	550	6,192	6,742	550	6,192
Misc. products <sup>b</sup>	M cubic feet	8,488	3,884	4,604	8,488	3,884	4,604
					106,611	11,639	94,972

<sup>a</sup> International 1/4-inch rule.

<sup>b</sup> Includes posts, poles, handle stock, and fence rails.

**Table 2.—Change in timber output from roundwood in West Virginia between 1965 and 1974**

Product	All species			Softwoods			Hardwoods		
	1965	1974	Change	1965	1974	Change	1965	1974	Change
	<i>Million cubic feet</i>		<i>Percent</i>	<i>Million cubic feet</i>		<i>Percent</i>	<i>Million cubic feet</i>		<i>Percent</i>
Sawlogs	84.5	72.2	-14	3.6	2.9	-19	80.9	69.3	-14
Pulpwood	27.1	18.2	-33	8.7	4.3	-50	18.4	13.9	-25
Veneer logs	.8	.5	-38	—	—	—	.8	.5	-38
Cooperage logs	.8	.5	-35	—	—	—	.8	.5	-35
Mine timbers	11.0	6.7	-39	.9	.5	-39	10.1	6.2	-39
Misc. products <sup>b</sup>	7.8	8.5	+8	(a)	3.9	(a)	7.8	4.6	-41
Total	132.0	106.6	-19	13.2	11.6	-12	118.8	95.0	-20

<sup>a</sup> Less than 50,000 cubic feet. Change not calculated.

<sup>b</sup> Includes posts, poles, handlestock, charcoal, and fence rails.

**Table 3.—Industrial roundwood harvest <sup>a</sup> in West Virginia by geographic regions, species groups, and products, 1974**

[In thousands of cubic feet]

Geographic region and species group	Product			All products
	Sawlogs	Pulpwood	Other products <sup>b</sup>	
Northeastern:				
Softwood	1,254	2,431	3,749	7,434
Hardwood	27,751	6,587	5,317	39,655
Total	29,005	9,018	9,066	47,089
Southern:				
Softwood	1,412	484	352	2,248
Hardwood	29,651	5,483	4,376	39,510
Total	31,063	5,967	4,728	41,758
Northwestern:				
Softwood	221	1,403	333	1,957
Hardwood	11,953	1,768	2,086	15,807
Total	12,174	3,171	2,419	17,764
All regions:				
Softwood	2,887	4,318	4,434	11,639
Hardwood	69,355	13,838	11,779	94,972
Total	72,242	18,156	16,213	106,611

<sup>a</sup> Does not include fuelwood or removals not manufactured into industrial products.

<sup>b</sup> Includes cooperage and veneer logs, mine timbers, handle stock, posts, pilings, and fence rails.

**Table 4.—Number of sawmills in West Virginia by geographic regions and annual production classes, 1965 and 1974**

Region	Production class <sup>a</sup>							
	Greater than 1 million board feet		Less than 1 million board feet		Idle and custom mills		Total	
	1965	1974	1965	1974	1965	1974	1965	1974
Northeastern	55	37	78	53	94	43	227	133
Northwestern	18	15	59	62	54	78	131	155
Southern	51	38	35	22	61	17	147	77
All regions	124	90	172	137	209	138	505	365

<sup>a</sup> Based upon the volume of sawlog receipts during calendar years 1965 and 1974.

**Table 5.—Sawlog production and receipts relationships in West Virginia by species groups and geographic regions between 1965 and 1974**

Species group and geographic regions	Production			Receipts		
	1965	1974	Change	1965	1974	Change
	<i>Million board feet <sup>a</sup></i>	<i>Million board feet <sup>a</sup></i>	<i>Percent</i>	<i>Million board feet <sup>a</sup></i>	<i>Million board feet <sup>a</sup></i>	<i>Percent</i>
Softwoods:						
Northeastern	9.0	7.5	- 17	9.1	6.7	- 26
Southern	10.4	8.5	- 18	10.3	7.9	- 23
Northwestern	.8	1.3	+62	.7	1.3	+86
All regions	20.2	17.3	- 14	20.1	15.9	- 21
Hardwoods:						
Northeastern	192.3	178.6	- 7	193.9	188.1	- 3
Southern	217.0	190.9	- 12	217.1	180.0	- 17
Northwestern	61.2	76.9	+26	54.3	63.3	+17
All regions	470.5	446.4	- 5	465.3	431.4	- 7
All species	490.7	463.7	- 5	485.4	447.3	- 8

<sup>a</sup> International 1/4-inch rule.

**Table 6.—Sawlog production and receipts in WEST VIRGINIA, by species and destination of shipments, 1974**

[In millions of board feet, International 1/4-inch rule]

Species	Cut and retained in state	Exported to:			Total production	Imported from:			Total receipts
		Pennsylvania	Virginia	Other states		Maryland	Virginia	Other states	
Hemlock	5.0	—	—	—	5.0	(a)	0.2	—	5.2
Yellow pine	4.1	—	0.3	—	4.4	(a)	—	(a)	4.1
Other pines	3.5	—	—	—	3.5	0.1	.1	(a)	3.7
Other softwoods	2.9	—	1.5	—	4.4	(a)	(a)	—	2.9
Total softwoods	15.5	—	1.8	—	17.3	0.1	0.3	(a)	15.9
Ash	7.9	0.3	.1	0.1	8.4	.3	(a)	0.1	8.3
Basswood	16.3	.2	—	(a)	16.5	.2	.1	.1	16.7
Beech	19.5	(a)	.5	.4	20.4	(a)	(a)	.3	19.8
Black cherry	12.5	.4	—	.1	13.0	.5	(a)	.1	13.1
Hickory	21.6	(a)	.8	.6	23.0	.2	.1	.3	22.2
Red maple	16.7	.9	.2	.2	18.0	.3	(a)	.2	17.2
Sugar maple	27.4	.4	.2	.6	28.6	.3	.1	.2	28.0
White oak	33.2	1.8	.2	1.1	36.3	.7	(a)	.4	34.3
Chestnut oak	36.1	.6	1.0	1.3	39.0	.4	.6	.2	37.3
Northern red oak	87.2	3.0	1.4	1.1	92.7	1.2	.1	.7	89.2
Other red oaks	48.5	1.4	1.2	1.0	52.1	.7	.2	.5	49.9
Yellow-poplar	71.0	1.6	1.3	1.1	75.0	1.2	.3	.3	72.8
Other hardwoods <sup>b</sup>	22.5	.5	.3	.1	23.4	(a)	.1	(a)	22.6
Total hardwoods	420.4	11.1	7.2	7.7	446.4	6.0	1.6	3.4	431.4
All species	435.9	11.1	9.0	7.7	463.7	6.1	1.9	3.4	447.3

<sup>a</sup> Less than 50,000 board feet.

<sup>b</sup> Includes sweet and yellow birch, cucumber tree, elm, gum, and black walnut.

**Table 7.—Sawlog production and receipts in the NORTHEASTERN REGION of West Virginia, by species and destination of shipments, 1974**

[In millions of board feet, International 1/4-inch rule]

Species	Cut and retained in region	Out-shipments		Total production	In-shipments		Total receipts
		To other regions	To other states		From other regions	From other states	
Hemlock	1.5	—	—	1.5	0.2	0.2	1.9
White pine	.8	—	—	.8	.1	.1	1.0
Other pines	1.1	—	—	1.1	.1	(a)	1.2
Spruces	2.2	—	1.5	3.7	(a)	(a)	2.2
Other softwoods	.4	—	—	.4	(a)	(a)	.4
Total softwoods	6.0	—	1.5	7.5	0.4	0.3	6.7
Ash	4.1	0.1	.3	4.5	.3	.3	4.7
Basswood	7.2	(a)	.2	7.4	.7	.4	8.3
Beech	6.6	.1	.2	6.9	.6	.2	7.4
Birch	1.6	(a)	.1	1.7	.2	(a)	1.8
Black cherry	9.7	.1	.2	10.0	.6	.5	10.8
Hickory	6.7	.2	.3	7.2	.7	.5	7.9
Red maple	8.4	.1	.6	9.1	.7	.5	9.6
Sugar maple	13.5	.1	.6	14.2	1.2	.5	15.2
White oak	12.5	.2	1.1	13.8	.7	.8	14.0
Chestnut oak	12.3	.2	1.5	14.0	1.2	1.0	14.5
Northern red oak	38.1	.2	2.3	40.6	2.1	1.6	41.8
Other red oaks	14.6	.3	1.3	16.2	.9	1.0	16.5
Yellow-poplar	25.1	.1	1.3	26.5	2.6	1.4	29.1
Other hardwoods <sup>b</sup>	6.0	.3	.2	6.5	.4	.1	6.5
Total hardwoods	166.4	2.0	10.2	178.6	12.9	8.8	188.1
All species	172.4	2.0	11.7	186.1	13.3	9.1	194.8

<sup>a</sup> Less than 50,000 board feet.

<sup>b</sup> Includes cucumbertree, elm, black gum, and black walnut.

**Table 8.—Sawlog production and receipts in the SOUTHERN REGION of West Virginia, by species and destination of shipments, 1974**

[In millions of board feet, International 1/4-inch rule]

Species	Cut and retained in region	Out-shipments		Total production	In-shipments		Total receipts
		To other regions	To other states		From other regions	From other states	
Hemlock	3.3	0.2	—	3.5	—	—	3.3
Yellow pines	2.8	(a)	0.3	3.1	—	—	2.8
Other pines	1.5	.1	—	1.6	—	—	1.5
Other softwoods	.3	(a)	—	.3	—	—	.3
Total softwoods	7.9	0.3	0.3	8.5	—	—	7.9
Ash	2.7	.1	—	2.8	(a)	(a)	2.7
Basswood	7.5	.4	—	7.9	(a)	(a)	7.5
Beech	9.9	.4	.4	10.7	(a)	(a)	9.9
Birch	1.4	.1	—	1.5	(a)	—	1.4
Black cherry	2.0	.2	—	2.2	(a)	—	2.0
Gum	2.7	(a)	—	2.7	(a)	—	2.7
Hickory	10.3	.6	.8	11.7	(a)	—	10.3
Red maple	6.9	.2	.1	7.2	(a)	(a)	6.9
Sugar maple	11.2	.6	.1	11.9	0.1	(a)	11.3
White oak	13.1	.5	.2	13.8	.1	(a)	13.2
Chestnut oak	16.2	.7	.7	17.6	.1	(a)	16.3
Northern red oak	32.1	1.0	1.0	34.1	.2	0.1	32.4
Other red oaks	20.3	1.1	1.1	22.5	.4	.1	20.8
Yellow-poplar	35.5	1.0	1.1	37.6	.4	.1	36.0
Other hardwoods <sup>b</sup>	6.3	.2	.2	6.7	.3	(a)	6.6
Total hardwoods	178.1	7.1	5.7	190.9	1.6	0.3	180.0
All species	186.0	7.4	6.0	199.4	1.6	0.3	187.9

<sup>a</sup> Less than 50,000 board feet.

<sup>b</sup> Includes cucumbertree, elm, and black walnut.

**Table 9.—Sawlog production and receipts in the NORTHWESTERN REGION of West Virginia, by species and destination of shipments, 1974**

[In millions of board feet, International 1/4-inch rule]

Species	Cut and retained in region	Out-shipments		Total production	In-shipments		Total receipts
		To other regions	To other states		From other regions	From other states	
Yellow pine	0.9	(a)	—	0.9	(a)	(a)	0.9
Other softwoods <sup>b</sup>	.3	0.1	—	.4	(a)	0.1	.4
Total softwoods	1.2	0.1	—	1.3	(a)	0.1	1.3
Ash	.7	.2	0.2	1.1	0.1	.1	.9
Basswood	.8	.4	.1	1.3	(a)	(a)	.8
Beech	2.1	.3	.2	2.6	.2	.1	2.4
Hickory	3.3	.5	.3	4.1	.5	.1	3.9
Red maple	.6	.5	.6	1.7	.1	(a)	.7
Sugar maple	1.4	.7	.5	2.6	.1	(a)	1.5
White oak	6.2	.7	1.8	8.7	.6	.1	6.9
Chestnut oak	5.5	1.0	.7	7.2	.7	.2	6.4
Northern red oak	14.1	1.7	2.2	18.0	.6	.4	15.1
Other red oak	11.1	1.1	1.3	13.5	1.1	.3	12.5
Black walnut	1.0	.1	.2	1.3	.1	.2	1.3
Yellow-poplar	7.0	2.3	1.7	11.0	.5	.3	7.8
Other hardwoods <sup>c</sup>	2.7	.9	.2	3.8	.4	(a)	3.1
Total hardwoods	56.5	10.4	10.0	76.9	5.0	1.8	63.3
All species	57.7	10.5	10.0	78.2	5.0	1.9	64.6

<sup>a</sup> Less than 50,000 board feet.

<sup>b</sup> Includes hemlock, white pine, and spruces.

<sup>c</sup> Includes birch, black cherry, cucumbertree, elm, and gum.

**Table 10.—Pulpwood production in West Virginia by species groups, 1963-1974<sup>a</sup>**

Year	All species	Softwoods	Hardwoods
1963	338.8	99.8	239.0
1964	398.2	109.6	288.6
2-year average	368.5	104.7	263.8
1965	411.7	102.6	309.1
1966	366.3	86.7	279.6
1967	450.7	96.7	354.0
1968	407.5	78.1	329.4
1969	429.1	88.3	340.8
5-year average	413.1	90.5	322.6
1970	385.1	73.3	311.8
1971	340.4	73.2	267.2
1972	335.3	74.6	260.7
1973	417.1	81.7	335.4
1974	412.1	54.5	357.6
5-year average	378.0	71.5	306.5

<sup>a</sup> Includes production from roundwood manufacturing residues.



**Table 11.—Output of pulpwood from roundwood in West Virginia by species groups and geographic regions, 1965-1974**

[In thousands of rough cords]

Species group and region	Roundwood pulpwood output in:										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	All years
Softwoods:											
Northeastern	68.4	57.2	64.5	46.0	49.8	40.4	41.8	44.5	40.0	28.6	481.2
Southern	7.3	5.5	6.8	6.5	8.9	8.9	6.4	5.4	16.9	5.7	78.3
Northwestern	26.6	21.8	21.3	18.9	19.9	19.0	20.9	20.3	17.3	16.5	202.5
All regions	102.3	84.5	92.6	71.4	78.6	68.3	69.1	70.2	74.2	50.8	762.0
Hardwoods:											
Northeastern	146.8	147.1	178.1	147.9	140.8	118.9	101.6	85.9	96.4	77.5	1,241.0
Southern	66.1	54.4	61.9	62.9	58.8	57.1	47.9	25.4	74.1	64.5	573.1
Northwestern	4.1	3.9	.7	5.9	1.5	11.5	9.6	8.8	13.5	20.8	80.3
All regions	217.0	205.4	240.7	216.7	201.1	187.5	159.1	120.1	184.0	162.8	1,894.4
All species	319.3	289.9	333.3	288.1	279.7	255.8	228.2	190.3	258.2	213.6	2,656.4

**Table 12.—Veneer log production in West Virginia, by species and consuming state, 1974**

[In thousands of board feet, International 1/4-inch rule]

Species	Cut and retained in West Virginia	Exported to:			Total production
		Pennsylvania	Virginia	Other states	
Basswood	—	—	6	—	6
Hickory	87	4	792	—	883
Maple	—	—	29	15	44
White oak	62	—	102	—	164
Red oak	275	254	119	—	648
Black walnut	62	—	—	132	194
Yellow-poplar	25	—	519	576	1,120
Other species	75	—	29	—	104
All species	586	258	1,596	723	3,163

**Table 13.—Veneer log production, receipts, and interstate shipments in West Virginia for selected years**

[In millions of board feet, International 1/4-inch rule]

Year	Production	Interstate shipments		Receipts
		Exports	Imports	
1963	7.0	4.5	3.8	6.3
1965	4.6	2.1	3.9	6.4
1968	7.9	5.1	5.9	8.7
1972	4.3	2.6	4.4	6.1
1974	3.2	2.6	3.7	4.3

**Table 14.—Production and distribution of manufacturing residues, by type of uses, and industry source, West Virginia, 1974**

[In thousands of cubic feet]

Source industry	Type of use	Type of residue			All types
		Bark	Coarse a	Fine b	
Lumber .....	Fiber	—	14,037	2,427	16,464
	Fuel c	2,995	1,086	2,461	6,542
	Agricultural d	104	—	793	897
	Other e	2,247	2,224	2,808	7,279
	All uses	5,346	17,347	8,489	31,182
	Unused	2,903	3,697	4,747	11,347
Veneer .....	Fiber	—	—	—	—
	Fuel	68	384	161	613
	Agricultural	—	—	—	—
	Other	—	—	—	—
	All uses	68	384	161	613
	Unused	10	12	5	27
Cooperage .....	Fiber	—	190	—	190
	Fuel	10	52	—	62
	Agricultural	—	—	9	9
	Other	38	21	38	97
	All uses	48	263	47	358
	Unused	13	43	7	63
Other industries .....	Fiber	—	218	—	218
	Fuel	—	233	—	233
	Agricultural	—	—	38	38
	Other	46	146	45	237
	All uses	46	597	83	726
	Unused	98	131	45	274
All industries f .....	Fiber	—	14,445	2,427	16,872
	Fuel	3,073	1,755	2,622	7,450
	Agricultural	104	—	840	944
	Other	2,331	2,391	2,891	7,613
	All uses	5,508	18,591	8,780	32,879
	Unused	3,024	3,883	4,804	11,711

a Includes slabs, edgings, trimmings, veneer cores, and other material suitable for chipping.

b Includes sawdust, shavings, and other material considered unsuitable for chipping.

c Includes both domestic and industrial fuel.

d Includes livestock bedding and farm and horticultural mulch.

e Includes small dimension, charcoal wood, and metallurgical chips.

f Excludes the woodpulp industry.

Headquarters of the Northeastern Forest Experiment Station are in Upper Darby, Pa. Field laboratories and research units are maintained at:

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- Beltsville, Maryland.
- Berea, Kentucky, in cooperation with Berea College.
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- Hamden, Connecticut, in cooperation with Yale University.
- Kingston, Pennsylvania.
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